

Technical data TAD520GE (mech & EDC4)

Standby & prime ratings

General

In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel.
Turbocharged

Number of cylinders			4
Displacement, total		litre in ³	4,76 290,7
Firing order			1-5-3-6-2-4
Bore		mm in	108 4,25
Stroke		mm in	130 5,12
Compression ratio			17.5:1
Dry weight	Engine and cooling package	kg	575
		lb	1268
Wet weight	Engine and cooling package	kg	606
		lb	1336
	SAE2	kg lb	36 79

Performance		r/min	1500	1800
Standby Power	without fan	kW	102	110
		hp	139	150
	with fan std cool.	kW	98	103
		hp	133	140
Prime Power	without fan	kW	94	101
		hp	128	137
	with fan std cool.	kW	90	94
		hp	122	127
Standby Power	without fan	kW	85	89
		hp	116	121
	with fan trop cool & dual sp	kW	79	80
		hp	107	109
Prime Power	without fan	kW	78	82
		hp	105	111
	with fan trop cool & dual sp	kW	71	73
		hp	97	99
Torque at:	Standby Power	Nm	649	584
		lbft	479	430
	Prime Power	Nm	598	536
		lbft	441	395
Mean piston speed		m/s ft/sec	6,5 21,4	7,8 25,7
Effective mean pressure at:	Standby Power	MPa	1,7	1,5
		psi	248	223
Max combustion pressure at:	Prime Power	MPa	12,9	12,8
		psi	1871	1856
Total mass moment of inertia, J (mR ²)		kgm ²	1,43	
		lbft ²	33,9	
Residual speed droop at load increase from 0 to 100%		%	≤ 5	
Friction Power		kW	6,0	8,6
		hp	8,16	11,696

Technical data TAD520GE (mech & EDC4)

Standby & prime ratings

Engine noise emission

Test Standards: ISO 3744-1981 (E)

sound power (without fan, intake and exhaust noise)

Tolerans ± 0.75 dB(A)

		r/min	1500	1800
Measured sound power Lw	No load	dB(A)	99,5	101
	Standby Power	dB(A)	102,5	104
	Prime Power	dB(A)	102,5	104
Calculated sound pressure Lp at 1 m	No load	dB(A)	86,5	88
	Standby Power	dB(A)	89,5	91
	Prime Power	dB(A)	89,5	91

Unsilenced exhaust noise

Data calculated as sound pressure Lp.

Assumed microphone distance 1 m

	r/min	1500	1800
Standby Power	dB(A)	108	108
Prime Power	dB(A)	107,5	108

Load acceptance

Test condition: Warm engine. Load acceptance performance can vary due to actual alternator inertia, voltage regulator, type of load and local ambient conditions.

Single step load performance at 1500 rpm - EDC4

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby

Available later

Single step load performance at 1800 rpm - EDC4

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby

Available later

Single step load performance at 1500 rpm - mech

Load (%)	Speed diff (%)		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-75	6,7		0,7						
0-100	16,7		2,2						
100-0	6,9		2,0						

Single step load performance at 1800 rpm - mech

Load (%)	Speed diff %		Recovery time (s)		Remaining load (%)	Speed diff (%)		Recovery time (s)	
	Prime	Standby	Prime	Standby		Prime	Standby	Prime	Standby
0-75	4,9		0,2						
0-100	8,1		1,7						
100-0	4,3		0,3						

Cold start performance

1500/1800

Cold start limit temperature	°C	-15
		-30*

* With manifold heater engaged, lubrication oil 15W/40

Technical data TAD520GE (mech & EDC4)

Standby & prime ratings

Derating

The engine may be operated up to 1000 m altitude and 40°C ambient air temperature without derating. For operation at higher altitudes and temperatures the power should be derated according to the following factors:

Altitude derating factor < 3000 m	% / m	4 / 500
Altitude derating factor > 3000 m	% / m	6 / 500
Ambient temperature derating factor	% / °C	3 / 5°C
Humidity	%	No derating

Lubrication system		r/min	1500	1800
Lubricating oil consumption	Standby Power	liter/h	0,08	0,08
		US gal/h	0,021	0,021
Oil system capacity including filters		liter	13	
		US gal	3,4	
Oil sump capacity:	max	liter	11	
		US gal	2,9	
	min	liter	9	
		US gal	2,4	
Oil change intervals/specifications:				
VDS-2*		h	500	
VDS, ACEA, E3*		h	500	
ACEA E2, API CD, CF, CF-4, CG-4*		h	500	
Engine angularity limits:	front up	°	30	
	front down	°	30	
	side tilt	°	30	
Oil pressure at rated speed		kPa	400 - 440	
		psi	58 - 64	
Oil pressure shut down switch setting		kPa	200	
		psi	29	
Lubrication oil temperature:	normal	°C	80	
		°F	176	
	max	°C	125	
		°F	257	
Oil filter micron size		mm	0,040	

* See also general section in the sales guide

Technical data TAD520GE (mech & EDC4)

Standby & prime ratings

Fuel system

		r/min	1500	1800
Prime Power Specific fuel consumption at:	25%	g/kWh lb/hph		
	50%	g/kWh lb/hph	212 0,344	215 0,349
	75%	g/kWh lb/hph	206 0,334	205 0,332
	100%	g/kWh lb/hph	206 0,334	205 0,332

Fuel system

		r/min	1500	1800
Recommended fuel to conform to		ASTM-D975-No1 and 2-D JIS KK 2204, EN 590		
Total fuel flow		liter/h US gal/h	360 95	450 119
Feed pump pressure		kPa psi	500 - 500 73 - 73	
Feed pump max suction head		m foot	1,5 4,9	
Fuel filter micron size		mm	0,008	
Prefilter / Water separator		mm		
Governor type/make, standard		Heinzman / EDC4		
Injection pump type/make		PFM1P00S2002 / Bosch		

Intake and exhaust system

			r/min	1500	1800
Air consumption at:	Standby Power	27°C 81°F	m ³ /min cfm	346 12219	436 15397
Air intake restriction, clean filter(s)			kPa in wc	1 4,0	1 4,0
Max allowable air intake restriction			kPa in wc	3 12,0	3 12,0
Air filter type			Single stage paper cartridge		
Air filter cleaning efficiency			%	99,85	
Heat rejection to exhaust at:		Standby Power	kW BTU/min	73 4134	82 4646
Exhaust gas temperature after turbine at:		Standby Power	°C °F	520 968	448 838
Max allowable back pressure in exhaust line			kPa In wc	5 20,1	7 28,1
Exhaust gas flow at:		Standby Power	m ³ /min cfm	16,2 572	19,8 699

Technical data TAD520GE (mech & EDC4)

Standby & prime ratings

Cooling system

		r/min	1500	1800
Heat rejection radiation from engine at:	Standby Power	kW	12	13
		BTU/min	694	751
Heat rejection to coolant at:	Standby Power	kW	51	57
		BTU/min	2923	3230
Recommended coolant		Volvo coolant or Volvo anticorrosion additive together with clean fresh water		
Radiator cooling system type		Closed circuit		
Radiator core area (std. size)		m ²	0,29	
		foot ²	3,12	
Radiator core thickness (std. size) - standard cooling package		mm	62	
		in	2,44	
Fan diameter - standard cooling system		mm	516	
		in	20,31	
Fan power consumption - standard		kW	4,2	7,3
		hp	6	10
Fan power consumption - tropical cooling system		kW	6,4	8,8
		hp	9	12
Fan drive ratio		1,73:1		
Coolant capacity,	engine	liter	7,2	
		US gal	1,90	
	std radiator with hoses	liter	12,5	
		US gal	3,30	
Coolant pump		drive/ratio	1,73:1	
Coolant flow with standard system		l/s	163	205
		US gal/s	43,06	54,16
Maximum external coolant system restriction		kPa	25	35
		in wc	100	141
Thermostat,	start to open	°C	83	
		°F	181	
	fully open	°C	95	
		°F	203	
Maximum static pressure head		kPa	100	
		in wc	402	
Pressure cap setting on standard radiator		kPa	60	
		in wc	241	
Maximum top tank temperature		°C	105	
		°F	221	
Shutdown switch setting		°C	113	
		°F	235	
Recommended draw down capacity	10% of total cooling system capacity			

Technical data TAD520GE (mech & EDC4)

Standby & prime ratings

Cooling performance

Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 105°C TTT and 50% antifreeze (radiator and cooling fan, see optional equipment)

Engine speed rpm	Air on temp °C	110% OF PRIME POWER		STANDBY POWER	
		Air flow m ³ /s	Max additional external restriction Pa	Air flow m ³ /s	Max additional ext. restriction Pa
1500 standard tropical	45			5400	150
	60			7920	150
1800 standard tropical	45			6480	150
	60			8640	150

Electrical system

r/min 1500 1800

Voltage and type		12V / 1 pole system	
Alternator:	make/output	Amp	Bosch/55
	tacho output	Hz/alt. Rev	6
	drive ratio		3,01:1
Starter motor	make		Bosch
	type		EV
	kW		3,1
Starter motor solenoid,	pull current	Amp	60
	hold current	Amp	12
Number of teeth on:	flywheel		129
	cam wheel		96
	starter motor		9
Starter motor battery capacity:	max	Ah	176
	min at +5°C	Ah	110
Stop solenoid,	max	Amp	3
Inlet manifold heater (at 20 V)		kW	
Power relay for the manifold heater		Amp	